

**Notice of Allowability**

Application No.

10/708,512

Applicant(s)

KOTSONIS ET AL.

Examiner

Albert K. Wong

Art Unit

2612

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the application filed 3/9/2004.
2. ☒ The allowed claim(s) is/are 1-33.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.  
(a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached  
1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.  
(b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |  |   |
|--|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)           |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 6. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____ |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),<br>Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment                   |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material                     | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance  |
|  | 9. <input type="checkbox"/> Other _____   |

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1. This Office action is in response to the application filed March 9, 2004. Claims 1-33 are pending. The IDSs filed January 30, 2006, May 25, 2005, August 2, 2004, and March 9, 2004 have been considered and hereby acknowledged.

### **EXAMINER'S AMENDMENT**

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Jennie Salazar on April 4, 2006.

The application has been amended as follows:

1. (Currently Amended) An apparatus for generating electrical power in a tubular housing disposed in a borehole wherein drilling fluid flows through the tubular housing, the apparatus comprising:

a first stator adapted for being secured within the tubular housing against rotation relative to the tubular housing, the first stator having an array of conductive windings therein;

a tubular first rotor rotatably carried circumferentially about the first stator, the first rotor having an array of magnets therein; and

an impeller peripherally affixed to the first rotor;

whereby drilling fluid flowing through the tubular housing when the apparatus is disposed therein engages the impeller and induces rotation of the first rotor about the first stator to generate electrical power.

11. (Currently Amended) The apparatus of claim 10, wherein the bearings include at least one downstream axial bearing disposed between the downstream end portions, and further comprising an elastically-deformable member disposed between the downstream end portion of the first stator and the downstream axial bearing, whereby the flowing of drilling fluid through the tubular housing imposes a downward force on the impeller that moves the first rotor axially some distance downstream, compressing the member, and the member expands to lift the first rotor by the same distance when the drilling fluid flow is stopped.

20. (Currently Amended) A system for generating electrical power in a drill string disposed in a borehole, comprising:

- a tubular housing connected within the drill string;
- a stator secured within the tubular housing against rotation relative to the tubular housing, the stator having an array of conductive windings therein;
- a tubular rotor rotatably carried circumferentially about the stator, the rotor having an array of magnets therein; and
- an impeller peripherally affixed to the rotor;

whereby drilling fluid flowing through the drill string engages the impeller and induces rotation of the rotor about the stator to generate electrical power.

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23. (Currently Amended) A method for generating electrical power in a borehole, the method comprising the steps of:

rotatably supporting a rotor circumferentially about a stator, the rotor having a peripheral impeller;

securing the stator within a drill string against rotation relative to the drill string, the drill string being disposed in the borehole; and

flowing drilling fluid through the drill string, whereby the impeller converts the hydraulic energy of the drilling fluid into rotation of the rotor about the stator to generate electrical power.

3. The following is an examiner's statement of reasons for allowance: The claims recite an apparatus and a method for generating power within a borehole using a stator secured against rotation to a drill string and a rotor located circumferentially about the stator. Such a combination is not taught or suggest in the prior art of record. In conventional power generation systems within a borehole, the rotor is located within the stator. It is noted that the addition of the term "circumferentially" is not intended to narrow the claims but merely to clarify the claims. One definition of the term "about" would include placement around an object (i.e. circumferentially). This is clearly the intention of the invention as disclosed in the specification. However, the generic term "about" includes other definitions that are not so limiting.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue

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fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Albert K. Wong whose telephone number is 571-272-3057. The examiner can normally be reached on M-Th.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on 571-272-7308. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Albert K. Wong  
April 5, 2006

**ALBERT K. WONG**  
**PRIMARY EXAMINER**